CLAIMS

What is claimed is:

5   1. An apparatus to control a brushless Direct Current (DC) motor equipped with a

rotator, the apparatus comprising:

a converting unit to convert Alternating Current (AC) power to polyphase AC

power and supply the polyphase AC power to the brushless DC motor;

a rotator operation detecting unit to detect operation information of the rotator;

10   and

a control unit to predict a phase commutation time of the polyphase AC power

and control an ignition time of an ignition phase current to be earlier than the phase

commutation time.

15   2. The brushless DC motor control apparatus according to claim 1, wherein the

control unit predicts the phase commutation time of the polyphase AC power using either

the operation information of the rotator or variation information of the polyphase AC

power supplied to the brushless DC motor, or both.

20   3. The brushless DC motor control apparatus according claim 2, wherein the

operation information of the rotator is either position information or speed information of

the rotator, or both.

4. The brushless DC motor control apparatus according to claim 2, wherein the

25   variation information of the polyphase AC power is zero crossing point detection

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information of an ignition phase voltage supplied to the brushless DC motor.

5. The brushless DC motor control apparatus according to claim 1, wherein the control unit controls all phase currents of the polyphase AC power, supplied to the brushless DC motor, to be conducted during a period between the ignition time of the ignition phase current and the phase commutation time.

6. The brushless DC motor control apparatus according to claim 1, wherein the converting unit comprises:

a converter to convert the AC power to DC power;

an inverter to convert the DC power to the polyphase AC power; and

a capacitor to connect between the converter and the inverter.

7. The brushless DC motor control apparatus according to claim 6, wherein the control unit controls the ignition time of the ignition phase current supplied to the brushless DC motor by generating an inverter control signal and outputting the inverter control signal to the inverter.

8. A method to control a brushless DC motor equipped with a rotator and supplied with polyphase AC power, the method comprising:

predicting an ignition phase commutation time of the polyphase AC power using operation information of the rotator; and

controlling an ignition time of an ignition phase current to be earlier than the phase commutation time.

9. The brushless DC motor control method according to claim 8, wherein the phase commutation time of the polyphase AC power is predicted using either the operation information of the rotator or variation information of the polyphase AC power supplied to the brushless DC motor, or both.

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10. The brushless DC motor control method according claim 9, wherein the operation information of the rotator is either position information or speed information of the rotator, or both.

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11. The brushless DC motor control method according to claim 9, wherein the variation information of the polyphase AC power is zero crossing point detection information of an ignition phase voltage supplied to the brushless DC motor.